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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/902,884 | 07/11/2001 | James J. Cervera | 08935-245001/ M-4962 | 9175 |
| 26161 | 7590 | 10/29/2003 | EXAMINER | |
| FISH & RICHARDSON PC 225 FRANKLIN ST BOSTON, MA 02110 | | | CREPEAU, JONATHAN | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1746 | |

DATE MAILED: 10/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|---------------------------------|------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 09/902,884 | CERVERA ET AL. |
| | Examiner Jonathan S. Crepeau | Art Unit 1746 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 11 July 2001.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-49 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 28-38 is/are allowed.
- 6) Claim(s) 1-3,7-27 and 39-49 is/are rejected.
- 7) Claim(s) 4-6 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

| | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5 . | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Claim suggestions

1. The clarity of claims 7, 8, 14, 15, 19, 20, 25, 26, 37, 38, 47, and 48 could be improved by amending the claims to specify that is the *carbon particles*, and not the cathode as a whole, that comprises between 25 and 75 wt% of the expanded and non-expanded graphite. This interpretation is supported at page 6, line 8 of the specification. Appropriate correction is suggested.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 39-44 are rejected under 35 U.S.C. 102(b) as being anticipated by Nardi (WO 99/34673). Regarding claim 39, the reference is directed to a primary alkaline battery having a cathode comprising expanded graphite. The battery further comprises an anode (18), a separator (22), and an electrolyte solution (see pages 7 and 8). Regarding claims 39 and 42-44, the cathode comprises graphite particles in an amount 3.2-6.25 wt% and thus manganese dioxide

particles in an amount of 93.75 to 96.8 wt% (see page 18). Regarding claims 39-41, the total pore (void) volume of the expanded graphite particles would inherently be higher than 0.1 mL/g. This can be calculated using real and apparent densities shown in Fig. 4. For sample S1, the real density is 2.30 g/mL, the Scott density is 0.04 g/mL and the tap density is 0.11 g/mL. Based on the apparent densities, one gram of sample S1 occupies 9.1 (or 25) mL. Based on the real density, 0.434 mL of this volume is occupied by actual graphite. Thus, 8.65 (or 25.56) mL/g of the graphite is occupied by pores or voids. Thus, the instantly claimed range is anticipated by the reference.

Thus, the instant claims are anticipated.

4. Claims 22-27 are rejected under 35 U.S.C. 102(e) as being anticipated by Davis et al (U.S. Patent 6,451,486).

Regarding claim 22, Davis et al. is directed to a primary alkaline battery comprising a cathode comprising manganese dioxide, expanded graphite, and non-expanded graphite. The battery further comprises an anode, a separator, and an electrolyte (see col. 2, line 40 et seq.). Regarding claims 22-24, the expanded graphite has an average (i.e., "D₅₀") particle size of between 15 and 40 microns (see claim 9 of the reference). Regarding claims 25 and 26, the carbonaceous part of the cathode comprises 25-75 wt% non-expanded graphite and 75-25 wt% expanded graphite (see col. 3, line 14). Regarding claim 27, the non-expanded particles have an average particle size of less than 20 microns (see claim 8 of the reference).

Thus, the instant claims are anticipated.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nardi.

The reference is applied to claims 39-44 for the reasons stated above. However, the reference does not expressly teach that the manganese dioxide comprises between 85 and 90 wt% of the cathode.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be sufficiently skilled to manipulate the amount of manganese dioxide so as to affect the capacity of the battery. Additionally, the artisan may use another active material in addition to the manganese dioxide,

thus keeping the percentage of manganese dioxide lower, as suggested on page 18 of Nardi.

Thus, the claimed range of 85-90 wt% manganese dioxide, although lower than the range expressly set forth by Nardi, would still be rendered obvious by the reference.

7. Claims 1-3, 7-21, and 39-49 are rejected under 35 U.S.C. 103(a) as being obvious over Davis et al. in view of Nardi.

Davis et al. is applied for the reasons stated above. Further, regarding claims 44 and 45, the manganese dioxide is present in the cathode in an amount of between 80 and 90 wt% (see col. 2, line 61).

However, Davis et al. do not expressly teach that the expanded graphite has a kerosene absorption greater than about 2.7 mL/g, as recited in claims 1-3, a BET surface area greater than about 5 m²/g as recited in claims 10-13, a Scott apparent density less than about 0.08 g/mL as recited in claims 17 and 18, or a total pore volume of greater than about 0.1 mL/g, as recited in claims 39-41.

As set forth above, Nardi is directed to an alkaline battery comprising expanded graphite particles. On page 25, Nardi teaches that the expanded graphite has a kerosene absorption in the range of 2.2-3.5 mL/g, a BET surface area of at least 18 m²/g, and a Scott density of no greater than 0.07 g/mL. As set forth above, the expanded graphite of Nardi would also inherently have a total pore volume of greater than 0.1 mL/g.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the

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expanded graphite of Nardi as the expanded graphite of Davis et al. In the abstract of Nardi, it is disclosed that this graphite provides “enhanced service performance” to the cell. Accordingly, the artisan would be motivated to use the expanded graphite of Nardi as the expanded graphite of Davis et al.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention “by another”; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).

8. Claims 1-3, 7-21, and 39-49 are rejected under 35 U.S.C. 103(a) as being obvious over Barsukov et al (U.S. Pre-Grant Publication No. 2001/0041293) in view of Nardi.

Regarding claims 1, 10, 17, 39, and 46, Barsukov et al. is directed to a primary alkaline battery comprising a cathode comprising manganese dioxide, expanded graphite, and non-expanded graphite (see abstract). The battery further comprises an anode, a separator, and an electrolyte (see paragraph 21). Regarding claims 7, 8, 14, 15, 19, 20, 47, and 48, the graphite mixture comprises 0.1-99.9 wt% expanded graphite (see claim 4 of the reference). Regarding claims 9, 16, 21, and 49, the non-expanded particles have an average particle size of less than 15 microns (see paragraph 45). Regarding claim 44, the manganese dioxide/carbon ratio is 11.5/1 (i.e., the manganese is present in an amount of 92 wt%) (see paragraph 37).

However, Davis et al. do not expressly teach that the expanded graphite has a kerosene absorption greater than about 2.7 mL/g, as recited in claims 1-3, a BET surface area greater than about 5 m²/g as recited in claims 10-13, a Scott apparent density less than about 0.08 g/mL as recited in claims 17 and 18, or a total pore volume of greater than about 0.1 mL/g, as recited in claims 39-41.

As set forth above, Nardi is directed to an alkaline battery comprising expanded graphite particles. On page 25, Nardi teaches that the expanded graphite has a kerosene absorption in the range of 2.2-3.5 mL/g, a BET surface area of at least 18 m²/g, and a Scott density of no greater than 0.07 g/mL. As set forth above, the expanded graphite of Nardi would also inherently have a total pore volume of greater than 0.1 mL/g.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the

expanded graphite of Nardi as the expanded graphite of Barsukov et al. In the abstract of Nardi, it is disclosed that this graphite provides "enhanced service performance" to the cell. Furthermore, Barsukov et al. identify the disclosure of Nardi in paragraph 4, and state that such expanded graphite materials "result[] in impressive improvements in the service performance of electric chemical cells" in paragraph 5. Accordingly, the artisan would be motivated to use the expanded graphite of Nardi as the expanded graphite of Barsukov et al.

Further, the claimed manganese dioxide range recited in claim 45 would be rendered obvious for the reasons set forth above.

Double Patenting

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Claims 22-27 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-16 of U.S. Patent No. 6,451,486 (Davis et al.). Although the conflicting claims are not identical, they are not patentably distinct from each

other because the claims of the '486 patent anticipate the instant claims. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993).

11. Claims 1-3, 7-21, and 39-49 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-16 of U.S. Patent No. 6,451,486 in view of Nardi. The '486 patent claims do not recite that the expanded graphite has a kerosene absorption greater than about 2.7 mL/g, as recited in claims 1-3, a BET surface area greater than about 5 m²/g as recited in claims 10-13, a Scott apparent density less than about 0.08 g/mL as recited in claims 17 and 18, or a total pore volume of greater than about 0.1 mL/g, as recited in claims 39-41. As set forth above, Nardi is directed to an alkaline battery comprising expanded graphite particles. On page 25, Nardi teaches that the expanded graphite has a kerosene absorption in the range of 2.2-3.5 mL/g, a BET surface area of at least 18 m²/g, and a Scott density of no greater than 0.07 g/mL. The expanded graphite of Nardi would also inherently have a total pore volume of greater than 0.1 mL/g. In the abstract of Nardi, it is disclosed that this graphite provides "enhanced service performance" to the cell. Accordingly, the artisan would be motivated to incorporate the expanded graphite of Nardi into the battery defined by the '486 patent claims. Thus, the instant claims are an obvious variation of the '486 patent claims.

Allowable Subject Matter

12. Claims 28-38 are allowed.

13. Claims 4-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter:

Claim 4 recites, among other features, that the kerosene absorption of the expanded graphite is greater than about 4.0 mL/g. Claim 28 recites that this value is greater than about 4.4 mL/g. Nardi teaches a preferred kerosene absorption range of 2.2-3.5 mL/g, but does not fairly suggest using a kerosene absorption value above 4.0 mL/g. Accordingly, claims 28-38 are allowed, and claims 4-6 contain allowable subject matter.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (703) 305-0051 (prior to December 17, 2003) or (571) 272-1299 (after December 17, 2003). The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, can be reached at (703) 308-4333. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900. Additionally, documents may be faxed to (703) 872-9310 (for non-final communications) or (703) 872-9311 (for after-final communications).

Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

JSC

October 28, 2003

J. Crepeau
Jonathan Crepeau
Patent Examiner
Art Unit 1746